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TREATMENT PROCEDURE
FOR
LONGVIEW FIBRE COMPANY
Seattle, Washington
6000 GALLON AUTOMATIC BATCH/FILTER PRESS
WASTEWATER TREATMENT SYSTEM

PROCESS DESCRIPTION:

Wastewater to be treated will be collected in the 10,000 gallon equalization/collection tank. To begin treatment in the automatic mode, the following switches need to be set in their proper positions:

Switch	Position
System Mode Switch	Continuous
Equalization Transfer Pump	Auto
Equalization Mixer	Auto
Treatment Mixer	Auto
Polymac Pump (Coagulant)	Auto
Caustic Pump	Auto
Caustic Mixer	Auto
Polymer Pump	Auto
Polymer Mixer	Auto
Sludge Pump	Auto
Filtrate Pump	Auto
Filtrate Return	Off
Recirc./ Filter Press - E.B.V.	Auto
Decant - E.B.V.	Auto
Clean Water Transfer Pump	Not currently in use
Clean Water Tank (Blower Motor)	Auto

To start the actual treatment process, the treatment or continuous mode button will be switched to proper position. The air sparge for the equalization tank will be activated. The caustic tank mixer will also come on at this point. The wastewater transfer pump will transfer the ink and starch wastewater into the treatment tank until the high level float in the treatment tank has been activated. At this point the treatment "Start Level" indicator will light up and the equalization transfer pump will turn off. The "Treatment Start" will now be activated. Next, the recirculating/ sludge pump will turn on to allow the contents of the treatment tank to be recirculated through the pH sensor. After a short delay, the chemical addition sequence will begin. First, the coagulant (polymac6-4622) will be added by utilizing the feed pump mounted above the tank. This function is based on time and is currently set at (3) minutes. The Polymac is acidic and will lower pH between 6.5 to 7.5 Once this is complete there is again a short delay at which time the Caustic pump will turn on and feed Caustic(If necessary) into the treatment tank until the pH rises to approximately 7.0 via relay A of the pH meter.

Now the recirculating/ sludge pump will shut down and after a timed delay and the polymer pump will turn on to feed polymer into the treatment tank for (3 1/2) minutes.

The air pressure for the above mentioned chemical feed pumps should be set as follows:

Coagulant	Polymac6-4622	30 psi
Caustic	10 % solution	30 psi
Polymer	Polymer- B45	30 psi

During the polymer addition sequence, the treatment mixer will be turned off. After the polymer addition is complete the treatment mixer will turn on for (45)forty five seconds while at the same time the caustic and the polymer mixer(s) will shut off. Now the treatment sequence/cycle is complete. The treatment "cycle over/stop" button will illuminate to indicate that the treatment cycle has finished and the treated wastewater can now be processed through the Filter Press.
In the continuous mode, the system will automatically change the valving to allow the treated water to go through the filter press and begin the cycle. After a specified time delay (45 minutes) to allow for settling and gravity feed initially to assure minimal bleed through past the filter cloths, the PLC will advance the transducer to sequence the sludge pump air pressure as follows (approximately):

Setting	Pressure (psi)
1	10
2	15
3	20
4	40
5	60
6	70
7	80
8	90

The air pressure will advance as the pump slows (as the filter press fills/ cycles). When 80-90 psi is reached, the pump will continue at this pressure setting for three (3) hours. Then the "filter press cycle over" button will illuminate indicating that the filter press is ready to be emptied. The air operated pump will continue to operate at this pressure until the filter press/stop button is pressed by the Operator.

TO RESET CONTROL PANEL (PLC)

To begin treatment mode, press the treatment "stop/over" button and then the treatment "start " button. Remember to always clear the PLC before beginning the next cycle of treatment. "Clearing ' the PLC is accomplished by simultaneously pressing all (4) start and stop buttons.(Whenever mode switch is changed system requires reset).

MANUAL TREATMENT PROCEDURE:

1. Turn on the Equalization Mixer and Equalization Transfer Pump switches to the manual position and pump the starch/ink wastewater into the treatment tank.

2. Transfer the wastewater until the level in the treatment tank activates the "start level" light on the control panel.(Tank can be **overfilled** in the **Manual Position**).

3. Turn on the Treatment Mixer and the Sludge pump to allow pH sensor to read the pH.

4. Switch the Polymac 6-4622 pump switch to "manual", add enough polymac in order to lower the pH between 6.5 and 7.5 . (Between 10 and 15 gallons approximately).

5. Turn the Caustic pump switch to "manual". Now add caustic until the pH is raised to between 7.0 and 7.5 .(Approximately 20 gallons of a 10% dilution). Remember: Caustic is not always necessary and can be confirmed with Jartest procedure.

6. Perform a jar-test (as shown during training session)
   - add polymer to sample water
   - check for large floc development
   - check for water clarity

   {NOTE: If you get large floc and the water clarity is still dirty or cloudy then add more Polymac6-4622, but remember to re-adjust the pH and perform jar-test again.}

7. Once you've attained proper pH in treatment tank and have performed successful jar test, turn polymer pump on. At the same time as adding the polymer, turn off the treatment mixer. Add enough polymer to flocculate the solids.(Approximately 20-30 gallons). This will be visible from the platform by looking into the top of the treatment tank. Turn the polymer pump off once large floc has formed. Turn the treatment mixer back on and allow to run for 45 seconds to thoroughly mix polymer and flocculate solids.

8. Now the treatment cycle is complete and the wastewater can now go through the filter press cycle.

To Begin Filter Press Mode: Turn the system mode switch to "press", sludge pump in "auto", and air should be going through the transducer assembly (not bypassed as in manual operation). Press "filter press stop" button and the "filter press start" button at the same time to reset the computer, then press the filter press start button. The sludge pump will start operating after the delay timer runs down.

AUTOMATIC MODE - CHEMICAL TREATMENT:

1. Turn all pumps and mixers to the automatic position.

2. Turn mode switch to "continuous" setting . Reset both treatment and filter press start/ stop pushbuttons.

3. Start process by pressing treatment start/push-button.
Water will be transferred to treatment tank. The PLC will control chemical addition by adding a preset amount of coagulant, then adjusting the pH to the proper level with the caustic addition, and finally adding the polymer. The treatment mixer and sludge pump will be turned on and off at the appropriate levels.

NOTE: If press is dumped during continuous cycle, change the selector switch to "press"reset pushbuttons and restart filter press process.
This will allow the remaining sludge to be processed through the press.

The following are the timers and counters that can be modified with the PANELVIEW touchscreens(see panelveiw manual for specific screen information).

1) Polyal Counter - Pre-set setting is 48 or 3 minutes - 16 units = 1 minute.
2) Polymer Counter - Pre-set setting is 56 or 3 ½ minutes – 16 units = 1 minute.
3) Settling Time Counter -Pre-set setting is 30. Each unit is equivalent to 1 minute.
4) Gravity Time Counter - Pre-set setting is 5. Each unit is equivalent to 1 minute.
5) Low PSI Start Counter/Min - Pre-set setting is 15. Each unit is equivalent to 1 minute.
6) Strokes Counter/Min - pre-set setting is 8. If Sludge pump strokes fewer than 8 times in one minute, pressure is increased 10-15 psi.

7) Pressure Levels Settings:
N7:1 = 9000
N7:2 = 12000
N7:3 = 15000
N7:4 = 18000
N7:5 = 21000
N7:6 = 23000
N7:7 = 27000
N8:8 = 30000

CHEMICAL MIXING PROCEDURES

1) POLYMAC 6-4622: Mixing or dilution not required. Product is fed directly from 275 gallon storage tote.

2) CAUSTIC SODA-10% SOLUTION- Customer to supply. Product should be diluted to a maximum of 20%. **This is potentially dangerous chemical and all Employees handling this product should be aware of the safety requirements. WATER MUST BE ADDED TO MAKE UP TANK BEFORE PRODUCT.**

3) POLYMER- B/45: Add 16 ounces of the polymer concentrate per 30 gallons of water in the polymer chemical storage tank. **NOTE:** always add water first and then add in the polymer slowly. **Remember** to have the polymer mixer activated before adding the polymer concentrate.**EXAMPLE :** Empty 250 gallon tank will require 133 ounces of polymer concentrate(1 Gallon = 128 oz).

Note: Service is provided at no charge when the Treatment chemicals necessary for the successful operation of the Beckart system are supplied by Beckart Environmental Inc.

Beckart Environmental Inc.

Primary service

Western Region Sales & Service/Huntington Beach,CA (714) 841-0278

Secondary Service

Headquarters-Kenosha,WI 1-(800)-627-3769